

SYNOPTIC REVISION OF THE BEETLE GENERA *COTALPA*
AND *PARACOTALPA* OF THE UNITED STATES, WITH
DESCRIPTION OF A NEW SUBGENUS.

By LAWRENCE W. SAYLOR,

Fish and Wildlife Service, U. S. Department of the Interior.

Taxonomically the scarab beetles of the United States belonging to the Subfamily Rutelinae have been relatively neglected. The major papers treating the group have been those of Casey in 1915 and Ohaus in 1934. The work of Ohaus,¹ an especially valuable contribution, deals with the Tribe Rutelini of the world; keys to genera, general bibliographical references, and the history of the group, as well as lists of the described species in each genus, are given.

Ohaus treats the groups *Cotalpa* and *Paracotalpa* as subgenera of the genus *Cotalpa*. Though I have the greatest respect for Dr. Ohaus's judgment in rutelinid taxonomy, I am unable to accept his point of view in the present case; the facies of these segregates are very distinct, although to look at a summation of the differences in a key would lead one to think them closely related. The mouth parts and male genitalia are for the most part very similar. The males of both genera may be separated from the females by the fact that one claw of the front tarsus is much enlarged, whereas in the females both claws are more nearly the same size. Considering the characters of both genera in their entirety, the two are better differentiated than many genera that Ohaus accepts; they may be distinguished by the following characters:

- Glabrous above. Basal thoracic margin complete or very nearly so. Clypeus nearly rectangular, the angles narrowly rounded. Large claw of male cleft (not obvious in worn specimens); female claws entire.....*Cotalpa* (sensu str.) Burm.
Hairy above, usually densely so. Thorax with basal margin obvious only at the sides. Clypeus usually semicircular, rarely (*deserta*, new sp.) rectangular. Claws entire in both sexes.....*Paracotalpa* Ohaus.

¹ 1934. *Genera Insectorum*, fascicle 199 A., pp. 1-172. 6 plates.

Genus **COTALPA** Burmeister.

(Genotype: *C. lanigera* Linn.)

Cotalpa Burmeister, 1844, *Hand. der Entom.*, IV (1), p. 423; Ohaus, 1915, *Deutsch. Ent. Zeit.*, p. 256; Casey, 1915, *Mem. Coleop.*, VI, p. 88; Ohaus, 1934, *Gen. Insect.*, fasc. 199 A., p. 35.

This genus belongs to the Subtribe Areodina, which is characterized by having the clypeus separated from the forehead

by an entire clypeal suture, and the mandibles broadly rounded and neither pointed nor reflexed dorsally at the apex. *Cotalpa* is distinguished from the other three American genera in this subtribe by the following combination of characters: 10-segmented antennae; labrum three times wider than long and projecting slightly beyond the clypeus; mesosternum with at most a very small and rounded projection between the coxae, or none at all.

In the females, the apical tooth of the front tibia is more elongate than in the male and runs more nearly in a line with the axis of the tibia (see figure). The shape of the front tarsal segments also differs in the two sexes.

KEY TO THE UNITED STATES SUBGENERA.

- Apex of mentum slightly, widely emarginate. Mandible with outer edge nearly straight, outer apex without any tooth below.....
Cotalpa sensu str. Burm.
- Apex of mentum bisinuate, produced at middle into a very short and widely rounded lobe. Mandible with outer margin curved slightly, and the outer apex with a strong triangular tooth placed vertically below the apex.....*Ciocotalpa*, new subgenus.

CIOCOTALPA, new subgenus.

Very similar in all respects to *Cotalpa* Burmeister except as follows: The apex of the mentum is produced at the middle into a small, broadly rounded lobe, instead of being emarginate. The outer edge of the mandible is slightly rounded instead of straight. The outer apex of the mandible has a very strong triangular tooth on the under side, instead of entirely lacking such a tooth. The thorax is about two and one-half times broader than long in most specimens, instead of about twice as wide as long.

Genotype.—*Cotalpa consobrina* Horn.

Ciocotalpa consobrina (Horn).

Cotalpa consobrina Horn, Trans. Amer. Ent. Soc., 1871, p. 337.

Cotalpa (Cotalpa) consobrina Horn, Ohaus, Gen. Insect., fasc. 199 A., 1934, p. 36.

This species is common in various parts of Arizona, to which State it is apparently restricted. Dark phases occur commonly, in which the dorsal surface is considerably darker than the usual unicolorous testaceous, and the thorax may have a very strong copperish tinge. The small tooth on the largest front male tarsal claw is very commonly lost through wear.

Subgenus COTALPA, sensu str.

KEY TO THE SPECIES.

1. Sides of clypeus parallel. Puncturation of elytra very coarse, sub-rugose, visible even to the naked eye; elytra duller than the thorax. Thorax very highly metallic, the sides faintly rugose, the disc smooth; front angles bluntly and obtusely rounded. Kansas.....
subcibrata Wickham.
- Sides of clypeus usually convergent anteriorly, rarely subparallel. Elytra smooth and finely punctate, no more coarsely punctate than the thorax. Thorax and elytra equally shining. Sides of thorax smooth to very highly rugose..... 2
2. Sides of thorax very noticeably coarsely rugose and subgranulate. Pygidium usually nude or nearly so on disc. Front thoracic angles rectangular or nearly so. Dorsal surface highly polished, unicolorous yellow-testaceous, the head and thorax frequently somewhat reddish. Legs testaceous, the tarsi black. Utah, Nevada, New Mexico, Arizona.....*flavida* Horn.
- Sides of thorax smooth or nearly so, at most very faintly rugulose. Pygidium usually noticeably hairy..... 3
3. Size smaller (averages 20 mm. long, 12 mm. wide). Upper surface unicolorous light testaceous with a very highly metallic sheen. Common in eastern United States from Maine to the Carolinas, west through Minnesota and Iowa, and south to Louisiana and Texas.....*lanigera lanigera* Linn.
- Size larger and noticeably more robust (averages 24 mm. long, 15 mm. wide). Thorax dark with strong greenish cloudings, and sub-metallic. Elytra much darker testaceous, somewhat dull, puncturation coarser than in the above. Sides of clypeus at times subparallel basally. Indiana, Iowa, Wisconsin, etc.....
lanigera obesa Casey.

Cotalpa subcibrata Wickham.

Cotalpa subcibrata Wickham, 1905, Jour. N. Y. Ent. Soc. XIII, p. 3.

This is a rather common species in the region of Medora, Kans. The length of the last segment of the maxillary palpus varies considerably: it may be from three to four times as long as wide, and the point of greatest width may be at or beyond the center of the segment. The depth of the groove on this segment also varies, and the segment is much smaller and more elongate in the female than in the male. In some specimens there are two shallow but distinct foveae on each side of the front just behind the clypeal suture, but this is a variable character, more than half of the specimens examined having this area quite flat. A single example in the United States National Museum collections from "Lovelady, Texas, IV-30-06," may be this species, but

it is a little larger, and the elytra, though rugose, are not so much so as in the Kansas specimens.

Cotalpa flavida Horn.

Cotalpa flavida Horn, Trans. Amer. Ent. Soc. 1878, p. 53.

In his original description of this species Horn mentions that the sides of the elytra in the females are highly angulate anteriorly to the middle, and that they possess a large tubercle at the point of angulation. This is apparent in some females of this species, but not in all; it is also equally noticeable in some females of *lanigera* and *consobrina*. According to Casey, the basal thoracic margin is widely interrupted, but in the specimens I have seen it is very narrowly, or not at all, interrupted.

Recorded from Utah and Nevada; in addition specimens from New Mexico, and a fair series from Arizona, have been examined.

Cotalpa lanigera lanigera Linn.

Scarabaeus lanigerus Linne, Mus. Ludovic. Ulric. Regin. p. 22, Nr. 20, 1764.

Melolontha lanigera Linne, Fab., Syst. Ent., nr. 7, 1775, p. 33.

Areoda lanigera Linne, Laporte, Hist. Nat. Col. Vol. 2, 1840, p. 128.

Cotalpa lanigera Linne, Burm. Hand. Ent. Vol. 4 (1), p. 424.

Cotalpa (Cotalpa) lanigera Linn., Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 36.

Cotalpa vernicata Casey, 1915, Mem. Coleop., VI, p. 91 (NEW SYNONYMY).

Cotalpa molaris Casey, 1915, l. c., p. 90 (NEW SYNONYMY.)

Cotalpa tau Wickham, 1905, Jour. N. Y. Ent. Soc., XIII, p. 2. (NEW SYNONYMY.)

An examination of the types and paratypes in the Casey collection of *molaris* and *vernicata* indicates that they are not separable from the common *lanigera*, the two types of *vernicata* appearing to be merely robust females.

The type of Wickham's species is at the U. S. National Museum, in the Casey collection; a careful study of it convinces me that it is merely a variant of *lanigera*. The markings on the elytra are nearly bilaterally symmetrical but those on the thorax are not at all so; a specimen of *consobrina* from very near the locality where *tau* was taken halfway bridges over the differences between the oddly colored *tau* and the typical *lanigera*. This specimen of *consobrina* is marked on the elytra just as is *tau*, but the markings are only half as dark. I believe the color in both specimens is due to some greasy exudate from the body or to solutions that they may have been originally collected in; it is well known that various solutions may considerably change the color of highly iridescent specimens.

Cotalpa lanigera obesa Casey.

Cotalpa obesa Casey, Mem. Coleop. VI, p. 90.

I have examined the type series of eight specimens in the Casey collection and the few characters given in the key may possibly mark out a subspecies or form worthy of recognition. I am not at all convinced of the validity of the subspecies, but additional material is desirable.

Genus **PARACOTALPA** Ohaus.

Paracotalpa Ohaus, 1915 (July 1), Deut. Ent. Zeit., p. 256 (Genotype: *Cotalpa ursina* Horn); Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 38-9.

Pocalta Casey, 1915 (Sept. 27), Mem. Coleop. VI, p. 92-8; Fall, 1932, Jour. N. Y. Ent. Soc., XI, p. 203-4.

KEY TO THE SPECIES OF PARACOTALPA.

1. Entirely black dorsally. Clypeus very broad and truncate, sides parallel, the angles very narrowly rounded; suture hardly obvious. Elytra with very dense and minute punctures over the entire surface, intermixed with the larger rugose punctures. Punctures of thorax not contiguous on the disc but very rugosely so at sides; front margin distinctly bisinuate. Dorsal surface with very little hair. Mentum very slightly emarginate at apex. (San Diego region of Calif.).....*deserta*, new species.
 Coloration variable, rarely black. Clypeus not truncate, the angles very broadly rounded; suture strongly apparent. Elytra with intermixed sized but very sparse punctures. Front margin thorax rounded, not bisinuate. Mentum variable..... 2
2. Entire thorax densely, rugosely, and granulately punctate, with long, erect, whitish hair. Mentum deeply emarginate apically. Elytra rugosely punctate, the punctures rather sparse. Head, thorax, scutellum, and pygidium varying from dull green to a dull greenish blue; elytra always reddish, strongly shining, the hair varying from moderately dense to rather sparse; the striae always quite obvious. Idaho, Oregon, Washington, Utah, and California.....
granicollis Haldeman.
 Thorax densely punctate or not, never closely and rugosely granulate over the entire disc. Elytra much smoother, striae hardly or not evident, the punctures much finer. Color very variable 3
3. Elytra yellowish (never at all reddish) and strongly metallic, sparsely punctate, with long, erect, whitish hairs. Thorax, head, and pygidium a brilliant green, with very long hair, that of the head somewhat shorter. Punctures of thorax variable but usually more coarse and frequently more rugose than in *ursina*. Mentum deeply emarginate apically. Arizona and California.....
puncticollis Leconte.
 Size and color variable, never exactly as above. Elytra but rarely yellowish (*rotunda*), but with very little pubescence and that usually

- short, also the head and thorax piceous with bluish tinge, usually reddish to piceous. Mentum very slightly emarginate apically (*ursina* and subspecies).....4
4. Entire dorsal surface black, with bluish tinge, with very sparse hairs, the insects appearing at first glance to be glabrous above. Ventral surface and legs also piceo-bluish. (Central and Coastal California).....*ursina piccola*, new subspecies.
Color variable, never entirely black dorsally.....5
5. Elytra distinctly yellowish (in life a lemon yellow), usually very sparsely hairy, nearly glabrous. Thorax and head piceous with bluish tinge and long, erect brownish hair. Punctures on thoracic disc not contiguous, and usually relatively shallow. (San Bernardino and Tulare Counties, California.).....*ursina rotunda* Casey.
Elytra distinctly reddish or black, never yellowish.....6
6. Thorax, head, and scutellum very distinctly greenish.....7
Thorax, head, and scutellum black, with a bluish tinge, only very rarely with a greenish tinge and that then very faint. Body hairs varying from whitish to brown to very nearly piceous. Elytra usually reddish, rarely semipiceous. (Central and Southern California, generally distributed).....*ursina ursina* Horn.
7. Elytra black, with sparse to dense whitish hair (San Diego region of California).....*ursina nigricollis* Casey.
Elytra red, with sparse to dense whitish hairs (San Diego region of California).....*ursina rubripennis* Casey.

Paracotalpa deserta, new species.

Elongate-oval; black, the head, thorax, and legs with a bluish tinge. Nearly glabrous above. Head very densely, coarsely, and semirugosely punctate, the punctures of clypeus much coarser than those on front. Clypeus rather long, the sides parallel, the apex semitruncate with the angles very narrowly rounded; suture very indistinct, made out only with difficulty. Antenna black, the club equal to the funicle. Mentum of the same type as in *ursina*: disc somewhat shallowly and widely concave on apical half, and the apex very shallowly and angularly emarginate. Outer edge of mandible straight, apex rounded. Thorax with base margined only at sides, the lateral margins evenly rounded, ciliate, semicrenate; front angles produced and rectangular, hind angles very distinct but obtuse; front margin slightly produced in middle, so that the apical margin is distinctly bisinuate; disc with very dense and coarse, variolate punctures, these contiguous and rugose at middle of base and at the sides, with a very few minute punctures scattered over the disc and near the hind angles. Thorax nude except for the lateral marginal hairs and about two dozen long and erect hairs arranged in the form of a loose, wide-mouthed V on the center of the disc the point of the V being situated nearly at the middle of the base. Elytra finely rugose, glabrous; disc with scattered coarse punctures, the entire surface also with extremely dense and fine punctures; no striae indicated, not even the sutural. Pygidium with distinct bluish sheen, and disc with moderately dense and long erect hairs, the surface entirely covered with minute granular rugosities.

Abdomen and undersides with dense, long, whitish hairs. Legs and claw characters as in *ursina*. Length 17-18 mm. Width 915 mm.

The *Holotype* and *Paratype*, both females, and from the Saylor Collection, are from "San Diego, California" and "Desert, S. California," respectively. The holotype will be deposited on loan in the United States National Museum, and the paratype remains in the Saylor Collection.

This very distinct species can be confused with none of the described species of the group; the color, shape of clypeus, elytral puncturation, and bisinuate front thoracic margin are especially distinctive.

Paracotalpa granicollis Haldeman.

Cotalpa granicollis Haldeman, 1852, Stanbury Explor., Append., p. 374.

Cotalpa (Pocalta) granicollis Haldeman, Casey, 1915. Mem. Coleop., VI, p. 98.

Cotalpa (Pocalta) pubicollis Casey, 1915, l. c., p. 98; Fall, 1932, Jour. N. Y.

Ent. Soc. XL, p. 204. (NEW SYNONYMY)

Cotalpa (Paracotalpa) pubicollis Casey, Ohaus, 1915, Gen. Insect. fasc. 199 A., p. 39.

This relatively common species occurs over a wide range: Washington, Oregon, Idaho, Utah, and California. The record for the last-named State is based on a specimen taken in the Westgard Pass Plateau region in Inyo County, Calif., on May 27, 1937, by William Reeves, and presented to me by the collector. I have not as yet seen specimens from Nevada, though I should expect the species to occur there. An examination of Casey's types of *pubicollis* indicates that that so-called species was based on the phase of the species having a more bluish tinge to the thorax—a character not of specific import.

Paracotalpa puncticollis Leconte.

Cotalpa puncticollis Leconte, 1863, N. Spec. Col., I, p. 78.

Cotalpa (Pocalta) puncticollis Leconte, Casey, 1915, Mem. Col., VI, p. 94.

Cotalpa (Paracotalpa) puncticollis Leconte, Ohaus, 1915, Gen. Insect., fasc. 199 A., p. 39.

The distinctive coloring and other characters mentioned in the key will readily separate this pretty species. It is rather uncommon in collections and has been recorded previously only from Arizona; I collected a female specimen at Keys Ranch, near Cottonwood Springs, Mojave Desert, California, in April, 1936, in the vicinity of a group of cottonwood trees.

Paracotalpa ursina ursina Horn.

Cotalpa ursina Horn, 1867, Trans. Amer. Ent. Soc., I, p. 168; Casey, 1915, Mem. Col., VI, p. 94; Fall, 1932, Jour. N. Y. Ent. Soc., XL, p. 204.

Cotalpa (Pocalta) laevicauda Casey, l. c., 1915, p. 95. (NEW SYNONYMY.)

Cotalpa (Paracotalpa) laevicauda Casey, Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 39.

Cotalpa (Pocalta) brevis Casey, 1915, l. c. p. 95. (NEW SYNONYMY.)

Cotalpa (Paracotalpa) brevis Casey, Ohaus, 1934, l. c., p. 39.

? *Cotalpa (Pocalta) leonina* Fall, 1932, Jour. N. Y. Ent. Soc., XL, p. 204. (See note at end of this paper.)

This well known species is widely distributed in the State of California and is most commonly met with early in the year from March through May or June. The individuals in one locality vary considerably in the density and color of the pilosity, in size, and even slightly in the color of the elytra. An examination of Casey's types of *laevicauda* and *brevis*, as well as considerable series in my own collection convinces me that these names are not entitled to specific or even varietal standing. I have collected very extensive series of this species in several parts of central California; the males fly easily and commonly while the heavier females are most frequently found crawling on the ground or resting on shrubs or grasses. The habitats most commonly frequented by the species seem to be grassy hillsides near cottonwood trees and stream sides; I have watched the adults feed upon flowers of California poppy and several other herbaceous plants. Apparently the species digs a good deal, since many specimens are found that have the teeth of the front tibiae worn nearly away. On dull days neither sex appears to do much flying, but rest on the ground or slowly crawl over bushes.

The following subspecies are in most cases quite unlike the typical form in general facies, but since they are fairly close in all the essential characters, I believe it is better to give them subspecific, rather than specific, standing.

Paracotalpa ursina piceola, new subspecies.

Robust-oval, entirely black, the thorax with bluish tinge; sides of the elytra in the humeral region with a slight reddish tinge. Head, thorax, and at times the bases of the elytra with rather sparse, long, erect whitish hairs; otherwise glabrous above. All other characters of shape and puncturation of the dorsal surface, body, mouth parts, and the male genitalia, are essentially the same as in typical *ursina*. Length 16-17 mm. Width 9-9.8 mm.

The *Holotype* female from "Lewis Creek, Monterey County, California, coll. April, 1932, Saylor Collection," will be deposited on loan in the United States National Museum. The two para-

types, one of each sex, also from the Saylor Collection, will remain there; they are from "Smith R., California." I do not know just what locality the labels on the paratypes mean; I do not believe it means the Smith River in northern California, but more probably refers to a ranch in central coastal California.

This subspecies is very distinctively marked off from the typical form in color as well as by the much less densely-hairy dorsal surface.

Paracotalpa ursina rotunda Casey.

Cotalpa (Pocalta) rotunda Casey, 1915, Mem. Col., VI, p. 96; Fall, 1932, Jour. N. Y. Ent. Soc., XL, p. 204.

Cotalpa (Paracotalpa) rotunda Casey, Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 39.

Cotalpa (Pocalta) seriata Casey, 1915, l. c., p. 96; Fall, 1932, l. c. p. 204. (NEW SYNONYMY.)

This is a rather distinctive subspecies which so far has been recorded only from San Bernardino and Tulare Counties in central California. The larger size, relatively glabrous elytra, and the yellowish elytra will readily indicate the subspecies. I have a series collected on March 13, at Lemon Cove, Calif.; at the time of collection the elytra were a bright lemon yellow.

Paracotalpa ursina nigripennis Casey.

Cotalpa (Pocalta) nigripennis Casey, 1915; Mem. Col., VI, p. 97; Fall, 1932, Jour. N. Y. Ent. Soc., XL, p. 204.

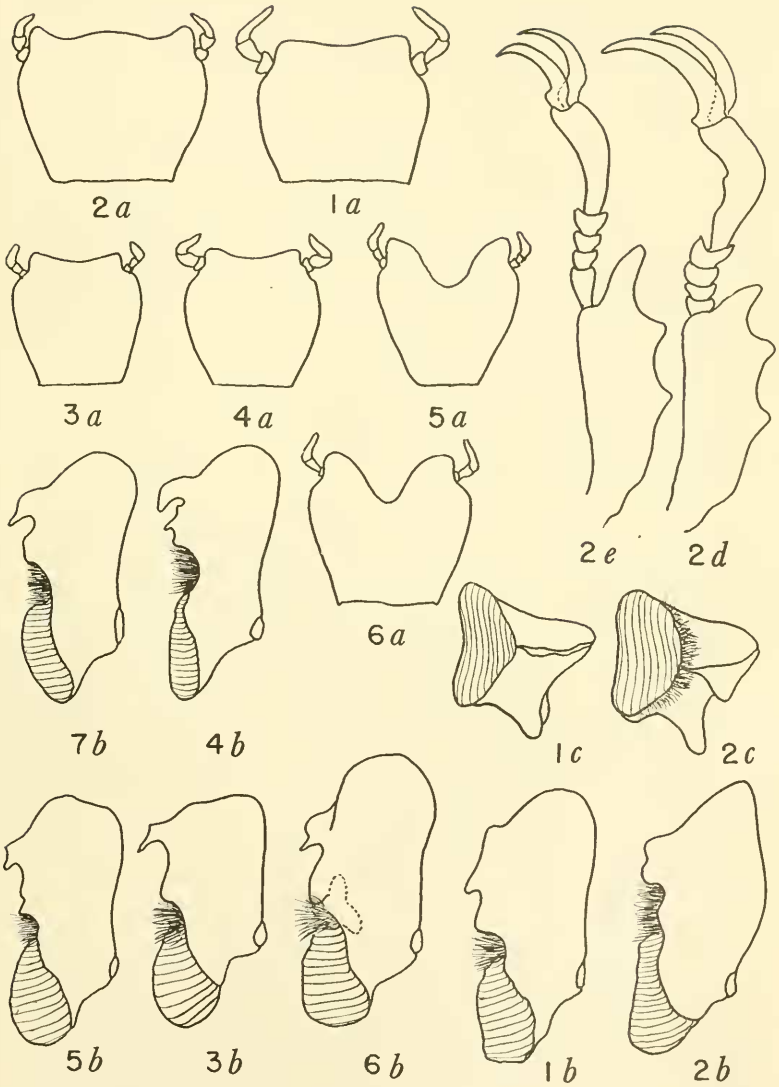
Cotalpa (Paracotalpa) nigripennis Casey, Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 39.

The subspecies varies considerably in the amount of elytral hair; a densely haired specimen and a glabrous one look quite different, but all other characters are exactly the same, and apparently the glabrous individuals are only rubbed or worn specimens. I have seen Casey's types and also several other specimens from Blaisdell's collection and that of the California Academy of Sciences, from which two collections Casey's original specimens came; Blaisdell tells me that this subspecies was formerly common near Poway, San Diego County; it is, however, rather rare in collections.

Paracotalpa ursina rubripennis Casey.

Cotalpa (Pocalta) rubripennis Casey, 1915, Mem. Col., VI, p. 97; Fall, 1932, Jour. N. Y. Ent. Soc., XL, p. 204.

Cotalpa (Paracotalpa) rubripennis Casey, Ohaus, 1934, Gen. Insect., fasc. 199 A., p. 39.



The remarks under *nigripennis* also apply here in their entirety, since the two forms appear to be color varieties at the most, but so distinctively marked as to be considered worthy of a name. Rare in collections but apparently locally common in certain regions of San Diego County, Calif.

STATUS UNCERTAIN.

Paracotalpa leonina, Fall.

Cotalpa (Pocalta) leonina Fall, 1932, Jour. N. Y. Ent. Soc., XI, p. 203-4.

Fall, in describing this form, was apparently very uncertain of its validity himself, since he held it in his collection for more than forty years before proposing a name for it. The description was based on an individual collected in Antelope Valley in the northern part of Los Angeles County, Calif. It is surprising that no other of the many collectors in this region has found this beetle. The characters Fall uses,—the “finer and denser puncturation and longer denser pilosity of the thorax,” are highly variable in any series of typical *ursina* and are not considered as of specific import. The only concrete character Fall offers for the separation of the species is the form of the prothorax, which he says is “widest at the apical third whereas in *ursina* the point of greatest width is about the middle”; since I can very nearly match his *leonina* in all characters, even the shape of the thorax, in my series of *ursina*, I do not believe the species is valid, but since I have not seen the type, I hesitate to make a more definite statement at the present time.

EXPLANATION OF FIGURES.

- Figure 1. *Cotalpa lanigera* (L.)
 2. *Cotalpa (Ciocotalpa) consobrina* Horn.
 3. *Paracotalpa deserta* Saylor.
 4. *Paracotalpa ursina* Horn.
 5. *Paracotalpa granicollis* Haldeman.
 6. *Paracotalpa puncticollis* Leconte.
 7. *Paracotalpa piceola* Saylor.
 a. Mentum.
 b. Mandible.
 c. En-face view of mandible.
 d. Front tibia of male.
 e. Front tibia of female.
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